**A Time to Sleep**

**Explore the strange and secret worlds of animals’ winter habitats with activities that reinforce skills across the curriculum**

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Why do some animals sleep through the winter? Let students in on the wonders of dormancy and hibernation, beginning with Fun Hibernation Facts.

**Hibernation KWL**Start off your unit with this clever version of a KWL chart. Draw a large sleeping bear on bulletin board paper, then display it with three "dream" bubbles, as shown. Next, give students each two sticky notes and ask them to write something that they already know about hibernation on one note, and something they'd like to know about hibernation on the other. Have students attach each note to the appropriate dream bubble. Review and discuss their responses. Later in your studies, ask children to add sticky notes to the third bubble to show what they've learned.

**When Food Freezes**When winter's cold temperatures and ice arrive, food becomes scarce for animals in the wild. Reinforce this concept with students through this easy classroom experiment. In advance, fill several ice trays with water and drop a small pineapple chunk into each section. Allow the water to freeze. Then pop out the cubes and give one to each child. Ask students to smell their ice cubes. Can they smell the pineapple? Challenge them to eat the pineapple chunks out of their ice cubes. How difficult is this task? Use this activity to discuss how wintry conditions make it hard for animals to find and get to food. Then explain that, because of the low food supply in winter, hibernating animals eat all summer and fall to fatten their bodies. The stored fat provides fuel to help the animals survive during their winter hibernation, which can last as long as six or seven months.

**Classroom Hibernation**During your unit, reserve some class time for students to "slow down" and take a short winter's rest. Appoint a special day and encourage students to bring in pillows, slippers, snack crackers, juice boxes, and favorite books, puzzles, or quiet games. Stock your class library with books about animals that hibernate, as well as other topics of interest to children. Then allow students to find a quiet private area in the room to "nest" during their hibernation. They can line their nests with snacks, personal items, and books from the class shelves. As they snuggle down, invite children to quietly engage in individual activities or to just put their heads down for a peaceful winter nap.

**Life-Cycle Mobiles**  
Hibernation or dormancy is only one part of an animal's yearly life cycle. After hibernation, an animal resumes its normal level of activity, including mating and raising its young. Have students each pick a hibernating animal to research. Ask them to find information about their animals' activities throughout the year and write their findings on a separate note card for each season. Guide students through the following steps to show the seasons of their animals' life cycles:

1. Open the top flaps of an empty cracker box, and cut off about 3" from the open end.
2. Poke two holes in the closed end of the box and thread with yarn.
3. Cover each side of the box with construction paper to represent a season, such as white for winter, green for spring, light blue or yellow for summer, and orange for fall.
4. Illustrate each side to show the animal's activities in that season.
5. Attach the note card for each season to the bottom of its corresponding panel with colored yarn.
6. Invite students to present their mobiles to the class, then take them home to share with their families.

**Conserving Energy**  
Hibernation not only eliminates the need for winter food-gathering, but also lets an animal conserve its body energy by slowing down its heart rate and breathing. To help illustrate this, set a timer during a rest period and have students take their pulses during a one-minute interval. Ask them to write down the results along with descriptions of their breathing during this time. Then in an open area, have them perform vigorous exercises such as jumping, running, and hopping for several minutes. Afterward, have them sit and take their pulses again. How do the results differ? How does their breathing compare? Does rest or activity require more energy?

**Temperature Experiment**While the average body temperature for a mammal is 99ºF, a hibernating animal's temperature drops to around 43ºF. This is less than half the normal temperature and only 11 degrees above freezing! The lower temperature reduces the amount of energy an animal must use to keep warm. To demonstrate, half-fill a plastic shoe box with warm water and have students measure the temperature using a thermometer. Have them stir in one ice cube at a time and take a temperature reading after each addition, until the water reaches 43ºF. Then invite children to place their hands in the water to experience the body temperature of a hibernating animal. Do they think they could sleep comfortably at this temperature?

**A Place to Rest Mural**   
In the weeks before hibernation or dormancy, animals prepare their winter beds. Where do they sleep during this time? To help students find out, ask them to brainstorm a list of hibernating animals, then select and research an animal from the list. (See Hibernation Resources.) Instruct them to write on note cards how their animals prepare their hibernation homes. Do they build nests? Line them with food? Dig burrows? As students complete their research, invite them to create a winter mural by drawing their animals in their hibernation homes on bulletin board paper. Students then can add mounds of snow, icicles, and other winter scenery. After each student has had a chance to share his or her fact card with the class, attach it to the mural near the appropriate animal.

**Making My Nest**People don't actually hibernate, but many reduce their activity and spend more time indoors during the short winter days. Invite children to imagine that they do hibernate. What kinds of supplies will they store up for a long winter's rest? What will they line their nests with? What will they keep on hand for wakeful times when it's too cold to go outdoors? Provide students with paper plates, fabric or paper strips, store catalogs, sales flyers, and magazines. Then ask them to create personal winter nests by gluing the strips inside the plate and adding pictures of selected items to line their nests. During a sharing time, invite children to tell the class about their nests and why they chose some of the items in them.

**Hibernation Clocks**How do animals know when it's time to end their winter's hibernation? Scientists believe that animals may have internal clocks that arouse them when the weather becomes warmer. Invite children to solve simple word problems with a unique hibernation calendar-clock. To prepare, label each of 12 note cards with a different month. Attach January next to the 1 on a large class clock. Then attach February next to 2, and so on, until each clock number is represented by a month. Begin by pointing the minute hand to 12, then move the hour hand from one number to the next. Each time, ask students to name the hour and the corresponding month. When they have a clear understanding of how each clock number corresponds to a month of the year, present the word problems below. Let students use the classroom hibernation clock to solve them individually, then review and discuss their answers as a class.

1. January is at 1:00. At which number on the hibernation clock is November? (*11:00*)
2. Bear slept from 9:00 to 3:00 on the clock. During which months did Bear sleep? (*September, October, November, December, January, February, March*)
3. Squirrel gathered food from 6:00 to 10:00. Name the months that Squirrel spent preparing for winter. (*June, July, August, September, October*)
4. Groundhog slept from November to February. At what time on the hibernation clock did Groundhog wake up? (*2:00*)
5. Bat went into a cave to hibernate at 10:00 and woke up at 4:00. How many months did Bat hibernate? (*six months*)
6. Raccoon slept from 10:00 to 1:00. Then Raccoon slept from 2:00 to 5:00. How many total months did Raccoon hibernate? (*six months*)